

**SUBJECT: DEVELOPMENT OF PROPOSED NUTRIENT WATER QUALITY OBJECTIVES**

**Affected Water Quality Control Plan(s):**

Statewide Water Quality Control Plans

**Agency/organization:**

State Water Resources Control Board

**Staff contact:**

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**Committee:**

**Meeting Date**

10 February 2010

**Action needed:**

Information Item

**Deadline for action:**

**Project Summary:**

State Water Board staff continues to work towards the development of nutrient objectives for inland surface waters, estuaries, and enclosed bays. Proposed nutrient objectives are being developed in a phased approach. USEPA and Tetra Tech developed the California Nutrient Numeric Endpoint (CA NNE) framework and CA NNE scoping tools for freshwater in 2006 and since then has been used on a number of TMDLs and case studies. The CA NNE framework, CA NNE scoping tools and the results of these freshwater case studies are currently being prepared for external peer-review.

State Water Board and Southern California Coastal Water Research Project (SCCWRP) are in the process of getting our coastal waters to the same point as our freshwaters. The challenges that we face with coastal waters is that these waterbodies are different in nature, which in turn calls for detail differences within the similar overall nutrient criteria development approach that has been used for freshwater.

The use of multiple indicators in a "weight of evidence" approach provides a robust means to assess ecological condition and determine impairment. This approach defines an array of metrics or measures that individually provide limited information on biological status, but when integrated, functions as an overall indicator of biological condition. Development of nutrient objectives/nutrient policy comes into play as these various pieces come together.

**Additional Information:**

Technical Approach to Develop Nutrient Numeric Endpoints (NNE) for California  
<http://rd.tetrattech.com/epa/>

Technical Approach to Develop Nutrient Numeric Endpoints (NNE) for California  
Estuaries  
<http://rd.tetrattech.com/epa/>

Southern California Coastal Water Research Project  
<http://www.sccwrp.org/>

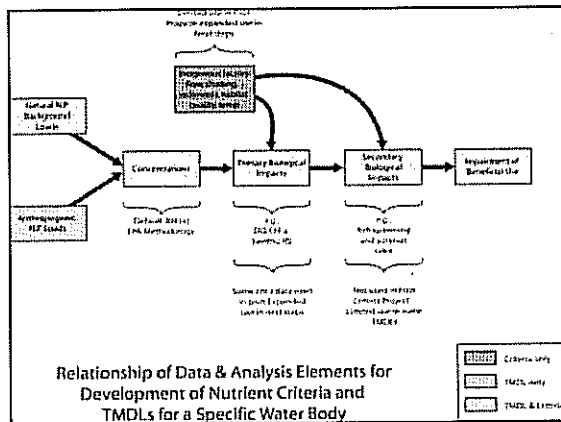


## Development of Proposed Nutrient Water Quality Objectives (WQOs)

Drinking Water Policy Workgroup  
Meeting  
February 26, 2008

## Nutrients: Unique Problems for WQO Development

- Nutrients occur naturally
- Too low nutrient levels may be a problem as well as too High
- Nutrients themselves generally don't cause impairment, it's secondary impacts such as algal growth, impacts on DO that cause concern
- Impact depends on secondary factors, such as light and residence time



## Two Extremes for WQO Development

- **Site-specific study:**  
Ideal: reflects characteristics and uses of a waterbody  
But, difficult to do for all waterbodies
- **Arbitrary statistical objective:**  
Simple, easy to apply  
But, may inappropriately classify waters as impaired

## Background

- UPEPA requires nutrient numeric criteria for all states – Recommended an ecoregion approach
- SWRCB attempted to establish nutrient numeric objectives for the entire state using USEPA's ecoregional statistical approach
- This lead to the other extreme of using a site-specific approach for all waterbodies of the state

## Team Players

- USEPA
- SWRCB
- STRTAG
- Tetra Tech
- Scientific Expert Advisory Board

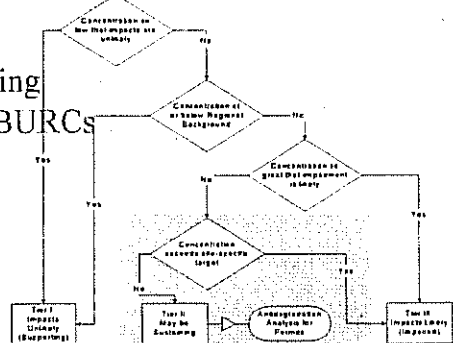
### “Weight of Evidence”

- Includes chemical and biological parameters
- Multiple parameters need to be considered simultaneously
- Used to “Sort” Waters into BURCs

### Beneficial Use Risk Category (BURC) Approach

- Rather than using a single number objective over a large geographic area, identify waters that are clearly unimpaired (BURC I), clearly impaired (BURC III), or in a gray area between (BURC II), where additional tools are used to assess impairment
- Approach falls between the extremes  
Use simple analyses, but recognize site-specific characteristics  
Identify where more detailed analyses are needed

### Sorting the BURCs



### Supporting Nutrient Numeric Endpoint (NNE) Toolbox

- NNE framework and NNE tools to relate nutrient concentrations to endpoints that impact beneficial uses
- NNE framework and NNE tools to evaluate first-cut site-specific modifications to Targets within BURCs

### A Phase Approach

- Rivers and Streams
- Lakes and Reservoirs
- Estuaries and Enclosed Bays

### Rivers and Streams

- A final draft of the document, “Technical Approach to Develop Nutrient Numeric Endpoints (NNE) for California”, has been completed and is available at <http://www.waterboards.ca.gov/technical>
- Four Case Studies have been completed using the NNE framework and NNE tools (Klamath River, Chorro Creek, Santa Margarita River, and Malibu Creek)

## Lakes and Reservoirs

- Machado Lake Nutrient TMDL (NNE)
- Klamath River Reservoirs (NNE)
- Indian Creek Phosphorus TMDL (SSM)
- Lake Elsinore and Canyon Lake Nutrient TMDLs (SSM)
- Big Bear Nutrient TMDL (SSM)

## Estuaries and Enclosed Bays

- A draft document, "Technical Approach to Develop Nutrient Numeric Endpoints (NNE) for California Estuaries", has been completed and is available at <http://rd.tetrattech.com/epa/>

## Staff's Proposed Approach

- Establish narrative nutrient objectives with translator mechanisms to help with the implementation of these proposed nutrient water quality objectives
- Support continued development of the NNE framework

## Next Steps

- Peer Review of Fresh Water NNE and Tools
- Continued use in TMDLs
- Estuarine NNE and Tool Development
- Development of Nutrient Objectives/Nutrient Policy

## Questions?

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